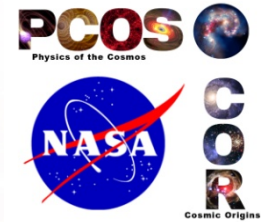


Advanced Mirror Technology Development

PI: Phil Stahl/MSFC



Description and Objectives:

- Mature the TRL of 6 key technology challenges for the primary mirror of future large-aperture Cosmic Origin UVOIR space telescopes
- Include monolithic and segmented optics design paths
- Conduct prototype development, testing and modeling
- Trace metrics to science mission error budget

Key Challenge/Innovation:

- Deep core concept design traceable to 4m mirror
- 4m to 8m mirror and support structure point design that would meet launch vehicle and science requirements

Approach:

- Provide guidance for science community architecture down select in 2015.
- Advance key technology required to enable 4 different implementation paths.
- Develop science and engineering requirements for traceable mirror systems and determine their associated mass. Then select a launch system or down-size the mirror systems and science requirements.

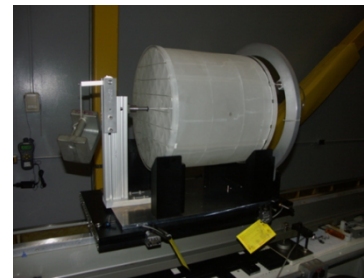
Key Collaborators:

- Dr. Scott Smith, Ron Eng and Mike Effinger/ NASA MSFC
- Bill Arnold/Defense Acquisition Inc., Gary Mosier/GSFC
- Dr. Marc Postman/STScI, Laura Abplanalp, Keith Havey, Roger Dahl, Steve Maffett/ITT Exelis

Development Period:

- Sept 2011 – Sept 2014

Subscale Deep Core Mirror Testing at MSFC XRCF



Subscale Deep Core Mirror Static Load Testing at Exelis

Accomplishments and Next Milestones:

- Modeled and validated by test at MSFC the deep core mirror's thermal performance
- Modeled and validated by test at Exelis the deep core mirror's static load performance
- Updated mirror & spacecraft modelers and generated point design
- Submit 9 papers to the SPIE Optics & Photonics conference/ August 2013
- Test AMSD type mirror/Dec 2013

Application:

- Flagship optical missions
- Explorer type optical missions
- Department of Defense and commercial observations

TRL_{in} = varies from TRL3 to TRL5.5 pending technology

TRL_{current} = varies from TRL3 to TRL5.5 pending technology

TRL_{target} = half step increase